On the mean places of Eight Southern Close Polar Stars.
By E. J. Stone, M.A., F.R.S., Radcliffe Observer.

In 1874 February I published and circulated the mean places of eight Southern close Polar Stars for the years 1860–1900. These places were deduced almost exclusively from observations made at the Cape Observatory, 1829–1873. The observations were brought up from one epoch to another, accurately by the trigonometrical method, with Peters' value of the precession constant ; and the proper motions given are merely the small outstanding corrections found from a discussion of the residual errors, on the assumption that the places required corrections of the form

$$\text{constant} + \text{constant} \cdot (t - 1860).$$

The publication of a Cape Catalogue of 1,713 stars by Dr. Gill has led me to compare the computed places with the following Catalogues :—Cape, 1860 ; Melbourne, 1870 ; Cape, 1880 ; Cape, 1885 ; and the Appendix to the Cape, 1885, which gives the results of the circumpolar observations, 1881–1888 for the epoch 1885.

The agreement of the computed places with the catalogued places appears to me remarkable for such close circumpolar stars ; in fact, the differences between the Right Ascensions given in the General Catalogue, 1885, and the Appendix are as great as the discordances between the computed and catalogued places themselves.

But my chief object in writing this Note has been to call attention to the smallness of the " proper motions in R.A." The fact that these residual motions are small for stars whose places were not employed in determining the precession constant, whilst the Right Ascensions of these eight stars change by such quantities as

$$-1^{m}\ 33^{s}\ ; \quad -28^{m}\ 30^{s}\ ; \quad +10^{m}\ 20^{s}\ ; \quad +16^{m}\ 11^{s}$$
$$+1^{h}\ 21^{m}\ 10^{s}\ ; \quad +1^{h}\ 25^{m}\ 55^{s}\ ; \quad +10^{m}\ 36^{s}\ ; \quad \text{and } +10^{m}\ 1^{s}$$

in 45 years, appears to afford independent evidence of the accuracy of Peters' value of the precession constant.

Name of Star and Adopted Proper Motions.	Year.	Mean R.A. Computed.	Mean R.A. Observed.	Computed minus Observed δα . sin Δ.	Mean N.P.D. Computed.	Mean N.P.D. Observed.	Computed minus Observed δΔ.	Catalogue.
		h m s	s	s	° ′ ″	″	″	
o Octantis	1860	0 13 24·54	24·93	−0·006	179 8 29·18	29·15	+0·03	Cape, 1860.
+0ˢ·012	1870	0 13 5·43	4·90	+0·008	179 5 8·96	8·88	+0·08	Melbourne, 1870.
0″·00	1880	0 12 50·29	50·31	0·000	179 1 48·73	48·54	+0·19	Cape, 1880.
	1885	0 12 44·00	45·04	−0·018	179 0 8·63	8·20	+0·43	Cape, 1885.
	1885	0 12 44·00	44·82	−0·014	179 0 8·63	8·41	+0·22	Cape, 1885, Appendix I.
A Octantis	1860	8 20 17·14	17·23	−0·002	178 27 23·22	23·27	−0·05	Cape, 1860.
−0ˢ·014	1870	8 13 53·47	53·48	0·000	178 29 15·97	15·87	+0·10	Melbourne, 1870.
−0′·02	1880	8 7 13·28	12·64	+0·017	178 31 3·94	4·39	−0·45	Cape, 1880.
	1885	8 3 46·92	46·51	+0·011	178 31 56·06	56·31	−0·25	Cape, 1885.
	1885	8 3 46·92	46·17	+0·019	178 31 56·06	56·99	−0·93	Cape, 1885, Appendix I.
Brisbane 4091	1860	12 29 50·80	50·82	0·000	179 1 48·36	48·37	−0·01	Cape, 1860.
−0ˢ·088	1880	12 34 45·87	46·00	−0·002	179 8 25·50	25·32	+0·18	Cape, 1880.
0″·00	1885	12 36 10·64	11·96	−0·019	179 10 4·57	4·53	+0·04	Cape, 1885.
	1885	12 36 10·64	10·67	0·000	179 10 4·57	4·66	−0·09	Cape, 1885, Appendix I.
x Octantis	1860	14 23 43·49	43·66	−0·007	177 33 54·68	54·65	+0·03	Cape, 1860.
−0ˢ·160	1870	14 27 20·95	20·83	+0·005	177 36 36·65	36·43	+0·22	Melbourne, 1870.
+0′·05	1880	14 31 6·17	5·56	+0·025	177 39 16·67	16·64	+0·03	Cape, 1880.
	1885	14 33 1·78	1·75	+0·001	177 40 35·92	35·83	+0·09	Cape, 1885.
	1885	14 33 1·78	0·79	+0·040	177 40 35·92	36·03	−0·11	Cape, 1885, Appendix I.

Name of Star and Adopted Proper Motions.	Year.	Mean R.A. Computed.	Observed.	Computed minus Observed δα . sin Δ.	Mean N.P.D. Computed.	Observed.	Computed minus Observed δΔ	Catalogue.
		h m s	s	s	° ′ ″	″	″	
σ Octantis	1860	17 48 8.80	7.89	+0.011	179 16 40.81	40.94	−0.13	Cape, 1860.
+0ˢ.075	1870	18 6 21.91	22.26	−0.004	179 16 43.40	43.33	+0.07	Melbourne, 1870.
+0″.02	1880	18 24 30.43	29.62	+0.010	179 16 30.02	29.92	+0.10	Cape, 1880.
	1885	18 33 28.93	30.42	−0.019	179 16 17.50	17.06	+0.44	Cape, 1885.
	1885	18 33 28.93	28.62	+0.004	179 16 17.50	16.90	+0.60	Cape, 1885, Appendix I.
B Octantis	1860	20 37 21.08	20.80	+0.003	179 28 51.78	51.96	−0.18	Cape, 1860.
−0ˢ.130	1870	20 55 36.26	36.71	−0.004	179 26 38.60	39.08	−0.48	Melbourne, 1870.
+0″.01	1880	21 11 31.45	31.72	−0.003	179 24 14.64	15.25	−0.61	Cape, 1880.
	1885	21 18 42.24	42.02	+0.002	179 22 59.27	60.17	−0.90	Cape, 1885.
	1885	21 18 42.24	44.15	−0.021	179 22 59.27	59.98	−0.71	Cape, 1885, Appendix I.
C Octantis	1860	22 3 34.62	34.82	−0.012	176 40 24.76	24.79	−0.03	Cape, 1860.
−0ˢ.035	1870	22 5 55.04	54.85	+0.011	176 37 28.18	28.18	0.00	Melbourne, 1870.
−0″.08	1880	22 8 11.88	12.00	−0.007	176 34 30.64	31.34	−0.70	Cape, 1880.
	1885	22 9 19.01	18.77	+0.014	176 33 1.53	2.38	−0.85	Cape, 1885.
	1885	22 9 19.01	18.74	+0.016	176 33 1.53	2.34	−0.81	Cape, 1885, Appendix I.
τ Octantis	1860	23 5 3.02	3.30	−0.009	178 14 55.70	55.73	−0.03	Cape, 1860.
+0ˢ.036	1870	23 7 14.37	14.12	+0.008	178 11 40.50	40.31	+0.19	Melbourne, 1870.
−0″.02	1880	23 9 18.98	19.18	−0.006	178 8 24.89	24.99	−0.10	Cape, 1880.
	1885	23 10 18.93	18.72	+0.007	178 6 46.95	47.33	−0.38	Cape, 1885.
	1885	23 10 18.93	18.84	+0.003	178 6 46.95	47.21	−0.26	Cape, 1885, Appendix I.

On the Proper Motion of the star B.A.C. 793.
By W. T. Lynn, B.A.

In the number of the *Monthly Notices* for May 1875 (vol. xxxv. p. 356) Professor Piazzi Smyth contributed a paper on the proper motion of the star *B.A.C.* 793 (= Piazzi II. 123), suggesting that this was variable in amount, and had sensibly diminished in R.A. and increased in N.P.D.   Mr. Dunkin, however, showed from a discussion of the Greenwich observations that there was no real evidence of change of this kind in either element.   He followed this up in the number for March 1876 (vol. xxxvi. p. 254), deducing the proper motion of the star from more recent Greenwich observations, which he determined to be $+0^s\cdot119$ in R.A. and $-1''\cdot50$ in N.P.D., and remarking that "the proper motion of *B.A.C.* 793 has not really changed during the present century."   Mr. Stone also communicated a short paper after Mr. Dunkin's, pointing out that the Cape observations of the star in R.A. (none were available in N.P.D.) did not give any evidence of change in proper motion.   The value used in the 9-year Catalogue (slightly modified in the 10-year) is the one determined by Mr. Dunkin, that in N.P.D. being about $0''\cdot2$ larger than the value given in the *B.A.C.*, which is $-1''\cdot31$, and had been adopted in previous Greenwich catalogues.

In a letter of mine which appeared in the number of the *Observatory* for last August, I showed, by comparing the places in the Greenwich 9-year and 10-year Catalogues, that there is some doubt whether after all the *B.A.C.* value of the proper motion in N.P.D. is not nearer the truth.

I will here set down the places derived from all the principal Greenwich catalogues, five of which contain observations of this star.   They are as follows :

In R.A.

Catalogue.	Epoch.	h m s	No. of Obs.
12-year (first part)	1840	2 27 18·75	5
6-year (corrected)	1850	2 27 51·81	1
7-year	1860	2 28 24·47	29
9-year	1872	2 29 3·818	13
10-year	1880	2 29 30·084	13

The differences of these give for

		s			s
10 years	+ 33·06		annually	+ 3·306
10 years	+ 32·66		,,	+ 3·266
12 years	+ 39·348		,,	+ 3·279
8 years	+ 26·266		,,	+ 3·283